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Investment financing statistics: GEA, C2A, DFA, FDI and Country Investment Profiles

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1. Investment Statistics – Introduction

Raising agricultural productivity is critical to increasing the real incomes necessary for better access to food.¹ A key factor in raising agricultural productivity lies in increasing investment in physical capital, such as farm machines, livestock and orchards, relative to land and labour inputs. Yet despite the existing gaps in capital-labour ratios and productivity between developing and developed countries, many developing countries continue to have lower rates of capital investment in agriculture compared, exacerbating the existing gaps.

According to FAO's *State of Food and Agriculture, 2012*: “Investing in agriculture is essential for reducing hunger and promoting sustainable agricultural production. Those parts of the world where agricultural capital per worker and public investments in agriculture have stagnated are the epicentres of poverty and hunger today.”²”

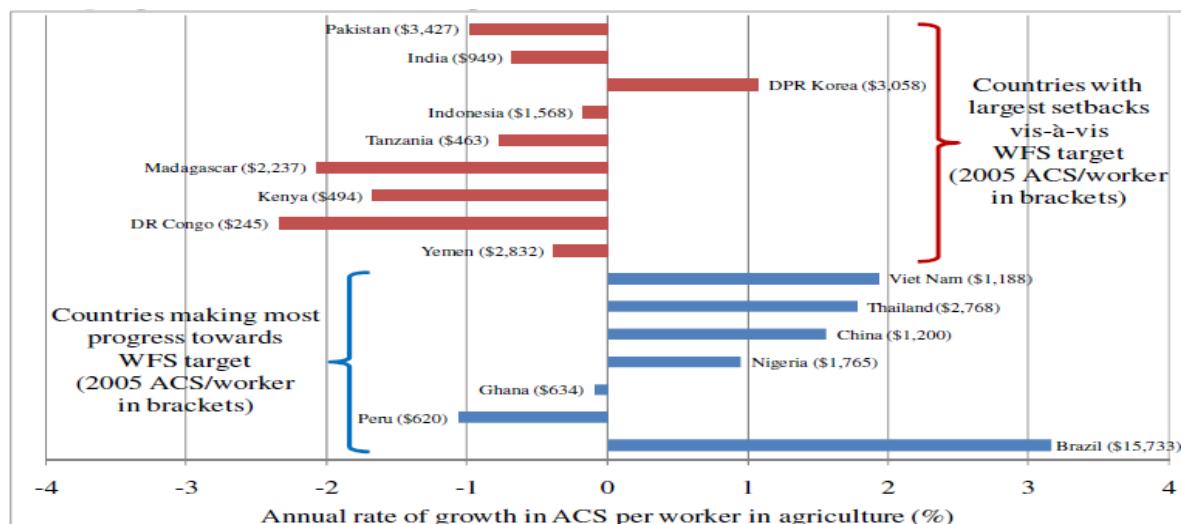
As shown in Figure 1, developing countries exhibit a strong positive correlation between investments in agriculture that grow agricultural capital stock (ACS), as measured by gross fixed capital formation (GFCF), and hunger reduction, measured by the World Food Summit (WFS) goal to eradicate hunger and reduce the number of undernourished. The graph shows that all countries with the largest setback vis-à-vis the WFS goal, except DPR Korea, had a negative annual growth rate in ACS per worker in agriculture for 1990-2005, while the opposite occurred in countries with the greatest progress towards the WFS goal.

¹ For a review of the magnitude of, trends in, and data gaps pertaining to investment in agriculture, see ESA Working Paper No.11-19 Financial Resource Flows to Agriculture

(<http://www.fao.org/docrep/015/an108e/an108e00.pdf>) and the 2012 State of Food and Agriculture (<http://www.fao.org/publications/sofa/en/>)

² 2012 State of Food and Agriculture (<http://www.fao.org/publications/sofa/en/>).

Figure 1: Annual rates of ACS growth (1990-2005): best and worst performing countries



Source: Von Cramon-Taubadel et al. (2009)

To support analysis of GFCF and its' associated sources of investment financing, FAO Statistics Division (ESS) developed a new global Agricultural Investment Dataset that covers the sources of investment financing: public and private, foreign and domestic. The component investment statistics databases, their underlying methodologies, and data challenges and data gaps are described in the rest of this paper.

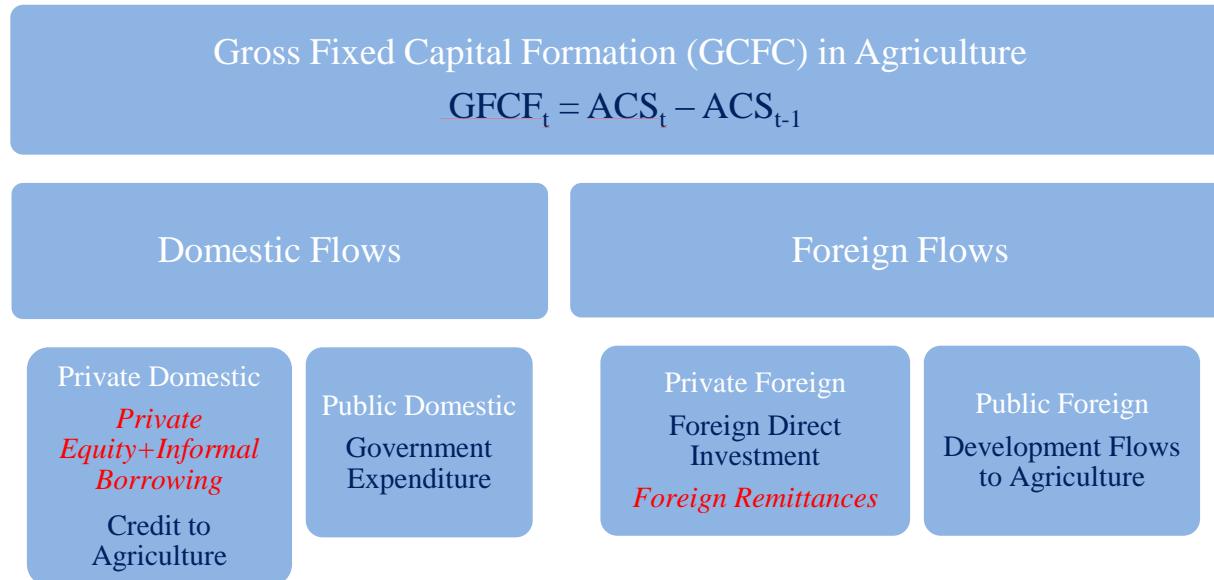
Throughout this paper, unless otherwise stated, the term “Agriculture” refers to the *broad agricultural sector* comprising the A+B categories of ISIC Rev.3,¹: Agriculture, hunting, forestry (A) and fishing (B), often referred to by the acronym AFF. The Agriculture sub-sector (Ag) is also be referred to as the *narrow agricultural sector*.

2. Current work on Agricultural Investment Statistics

To cover the public/private and domestic/foreign components of agricultural investment financing, this statistics domain is comprised of five main elements: Credit to Agriculture (C2A), Government Expenditures on Agriculture (GEA), Development Flows to Agriculture (DFA), Foreign Direct Investment in Agriculture (FDI), and Country Investment (Statistics) Profiles. Combined with a new database on Agricultural Capital Stock and Agricultural GFCF, the latter of which measures annual investment in produced capital, these data are used to create country-level Agriculture Investment Statistics profiles. The FAOSTAT's framework of agricultural investment flows is illustrated in Figure 2.

¹ ISIC refers to the International Standard Industrial Classification of all Economic Activities.

Figure 2. FAOSTAT's Agricultural Investment Data Framework



One key contribution of this investment statistics initiative is the harmonization of FAO work with that of other international organizations that compile similar data. FAO uses, where possible, methodologies and country-level global databases developed and compiled by other organizations such as the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Industrial Development Organization (UNIDO) and the United Nations Statistics Division (UNSD). The databases follow international classifications, where they exist, to increase harmonization. Furthermore, this approach, which minimizes duplication and country burden, was endorsed by member countries in the 23rd session of AFCAS in 2013, the 25th session of the Asia and Pacific Commission on Agricultural Statistics (APCAS) held in 2014, the 24th session of the Committee on Agriculture held in 2014, and the 27th session of the FAO-IICA working group on agricultural and livestock statistics for Latin America and the Caribbean held in 2015.

A second key contribution in this statistics is the production of two new indicators for each database. The first new indicator is the Agriculture share of the total investment flow. This share gives an indication of the relative importance placed on Agriculture. As it ignores the relative size of the agriculture sector in relationship to the overall economy, a second indicator is compiled, called the Agriculture Orientation Index (AOI). The AOI normalizes the Agriculture share of total investment by Agriculture's share of the economy, with the latter measured by Agriculture Value-Added over GDP. Countries with an AOI greater than 1 give more prominence to agriculture than its contribution to the economy, as measured by Agriculture value-added as a share of GDP, while those with an AOI less than 1 give more prominence to non-agricultural sectors.

One main limitation in this statistical domain is the absence of data on the largest components of private investment financing: private equity, or savings of agricultural producers and foreign remittances received; and informal borrowing, which includes borrowing from family, friends, local moneylenders, landowners, and input suppliers. Such information is likely best collected through agricultural surveys, and may require significant financial investments.

A second but important limitation is the absence of data and metadata from many countries on *all* the individual components of investment financing. This can arise in any individual component because of the absence of data collection; the absence of publication and access of collected data and metadata, particularly at the industry level required; and lack of timeliness in publication. The implication is an inability to produce complete and timely global databases that enable relevant international comparisons. This will be discussed further in the context of the individual databases. Effort by countries to improve the timeliness and detail in compiling and publishing existing investment financing statistics and providing free access to the data and metadata would go a long way to addressing this limitation.

a. GOVERNMENT EXPENDITURES ON AGRICULTURE

Although the private sector, largely agricultural producers, mobilizes most investment financing in agriculture, the public sector also plays an important role. Well targeted government expenditures can create a conducive environment for private investment through the provision of public rural infrastructure; agricultural research, education and extension services; and pro-investment and pro-agriculture regulations.

The share of government expenditures on agriculture (GEA) is not related in a simple way to the size of the agricultural sector, and depends *inter alia* on the overall importance given to this sector in government budgets. For that reason, it is also important to consider both the GEA share of total public expenditures, and the GEA AOI.

To address the need for comprehensive time series data on government expenditures on agriculture and to ensure comparable data across countries that align with international standards, ESS developed a Government Expenditures on Agriculture questionnaire in collaboration with the IMF Statistics Department and based on the *Government Finance Statistics Manual, 2001 (GFSM 2001)* methodology. ESS launched this questionnaire globally in 2012, requesting more detail on the agricultural sector relative to the IMF global questionnaire on government finance. In particular, ESS requested more subsector detail on expenditures on the narrow agricultural subsector, and separately on forestry and fisheries; data on environmental protection; and breakdowns on recurrent and capital expenditures, the latter of which were requested to proxy the amount spent on physical investment/infrastructure. The third annual global GEA data collection is currently underway.

The key challenges at country level, as described in presentation on FAO data collection, are the low and declining response rates and the poor rates of questionnaire completeness. This is particularly surprising for the many African countries that are signatories to the Maputo and Malabo declarations on Agriculture and Food Security, in which signatory nations commit to allocating at least 10% of their national budgets to agriculture and rural development.

For the official country data that is compiled from the FAO questionnaire, supplemented by data reported to the IMF, key findings on GEA include the following:

- Between 2001 and 2012, the average national share of government expenditures on agriculture, forestry and fishing (GEA) fell almost 30%, from 3% of total government expenditures to just over 2%. This 12-year decline was driven largely by Africa and Latin America, where the average expenditure share fell from 4.5% to 2.5%, and from 2% to 1.5%, respectively. This trend continued in Africa despite the global food price crisis of 2007-2008 and the Maputo Declaration.

- During 2001-2012, Africa experience the biggest decline in the agriculture share of government expenditures, falling from a high of 4.5% in 2001 to just over 2.5% in 2012.
- During 2008 to 2012, the top 10 countries in terms of agriculture share of government expenditures included 3 African countries in: Zambia (7% of total expenditures), Swaziland (6%) and Namibia (6%), which were in 8th, 9th and 10th place respectively.
- From 2001 to 2012, it was mostly developed countries, particularly in Europe, that had an AOI greater than 1, led by Luxembourg and Switzerland, where agriculture received three times as much in public expenditures as its contribution to GDP. At the other extreme, in Morocco, the Central African Republic, Liberia, Lebanon and Burkina Faso, the agricultural sector received less than one-tenth as much in public expenditures as its contribution to the country's GDP.

b. CREDIT TO AGRICULTURE

The extent to which formal private sector credit markets provide investment financing has a direct and positive correlation with growth in agricultural capital stock, and in turn, with agricultural productivity growth. This occurs because financial institutions in formal credit markets are better able to diversify and absorb risks across time, across borrowers, and across sectors, thereby lowering financing costs to borrowers, and better allocating savings. This source of formal financial sector financing is of particularly importance in sectors, such as agriculture, where producers face high risks not only in terms of the timing between the need to finance investments and the realization of income to repay loans, but also from the significant supply-side uncertainties that arise from climate and weather conditions (droughts, floods, etc), price volatility of their output, and the impact of pests and disease, which affect the volume and quality of their output.

Data on formal financial sector credit is typically collected, compiled and published as part of the monetary and financial statistics available from countries' central banks as part of their financial risk monitoring and management activities. These data serve as a benchmark indicator of formal domestic private sector investment activity. Most central banks include in these data, statistics on loans outstanding by national accounts' institutional sectors: household, the business sector excluding financial institutions, and government. The timeliness and frequency of publication varies by country, with the latter including monthly, quarterly or annual publication.

In addition, many central banks publish statistics on loans outstanding by industrial sector, including the agricultural sector. These data, when available, are harvested from Central Banks websites and official publications and compiled by FAO's Statistics Division (ESS) into a comprehensive credit to agriculture (C2A) dataset. Breakdown is provided for the three subsectors – agriculture, forestry, and fishing – or in some cases, a combination of these three, based on their availability. Credit is measured as loans outstanding at the end of the calendar year, or the period (day, month or quarter) most closely corresponding to calendar year-end.

While the current approach, using published official data, minimizes burden on countries, it exacerbates existing data challenges. There are three key challenges at country level:

- Lack of published data on C2A. This can arise because such data is not collected by central banks, or because it is collected but not published at the industry/agriculture level. In November 2015, C2A data for 2010 was found for 108 countries; for 2013 it covered 91 countries; and for 2014 it covered 66.

- Lack of published data on the agriculture subsectors (narrow agriculture, forestry and fisheries). Even when C2A data is available, subsector data is often not available, or is aggregated across two of the sub-sectors. This makes it difficult to analyse the level and distribution of credit and its impact on private investment across the subsectors
- Differences in the definition of “agriculture”, and from the absence of metadata to explain the definitions used. Not all central banks apply an industry level definition, which captures credit to agri-business. Central banks that define agriculture by the household borrower may incorrectly exclude agri-businesses and include land-owners who use farmland as collateral against loans, even if their primary income is non-agricultural from a different industry, but whose farms can act as collateral against loans.

Key findings from C2A data include the following:

- In 2012, the average national share of credit to agriculture (C2A) was 4.6% of total commercial credit, while the agriculture sector’s average contribution to the economy was 12.6% of Gross Domestic Product (GDP). This means that agricultural producers received a lower share of credit than producers in other sectors.
- From 1991, countries saw C2A fall from 8.6% of total credit to almost half its level in 2012, while agriculture’s contribution to GDP fell about one-third, from 18.9%. Most regions experienced this downward trend even after the food price crisis of 2007-08, despite increasing policy attention on food security issues and the role of the agricultural sector. The average C2A share of total credit declined in all regions relative to peaks experienced between 1999 and 2001.
- Between 2008 and 2012, the top 10 countries in terms of average C2A share of total credit included three African countries: Burkina Faso (4), Zambia (5), and Ethiopia (10). However, once the relative size of the agriculture sector is taken into account, only Gabon had an AOI over 1.

c. DEVELOPMENT FLOWS TO AGRICULTURE

Development Flows to Agriculture (DFA) from major bilateral, multilateral and private sector donors is an important complement to other sources of agricultural financing. To compile the DFA dataset, ESS harvests data from the OECD’s Creditor Reporting System (CRS), which records, at project level, Official Development Assistance (ODA) and Other Official Flows (OOF) from bilateral and multilateral donors. ODA and OOF both refer to flows from official agencies, including international organizations and state and local governments. ODA has the two additional requirements that it must: 1) promote economic development and welfare as its main objective; and 2) be concessional in nature (i.e. have a grant element of at least 25%). Examples of OOF include military aid and non-concessional loans. Though the OECD is expanding the CRS database to include development flows from private foundations, called private grants, at present this includes only grants from the Bill and Melinda Gates foundation.

For the first time, the CRS database also includes FAO expenditures on development. At present, only 2013 FAO expenditures on development were reported to the CRS, with plans to expand reporting of more recent expenditures and pre-2013 data in the next two years. Key findings on development assistance since 1995:

- Development assistance in 2013 totalled about \$260 billion. The agriculture sector received \$14 billion, or just over 5% of this total, a larger share than Agriculture's share of the economy. This may reflect the strong linkages between agriculture and food security.
- The DFA share of development assistance rose from 9% of total in 2006 to 12% in 2007 and 2008 immediately following the global food price crisis, and continued to rise to 14% by 2010. Even at its 2010 peak, the share never reached the 1995 high of 17% of the total.
- Recipient countries in Africa and Asia and the Pacific have received the lion's share of global DFA, at between 70% and 80% of the total, since 1995, with Africa as the largest regional recipient since 2012.

d. FOREIGN DIRECT INVESTMENT

A fourth source of agricultural investment financing comes from foreign direct investment (FDI). A host of factors have prompted increases in foreign direct agricultural investments involving significant use of agricultural land, water, and forested areas in developing and transition countries. These factors include spikes in food and fuel prices in the late 2000s, a desire by countries dependent on food imports to secure future food supplies in the face of uncertainty, expansion of integrated global value chains by large agri-businesses, and speculation related to land and commodity price increases.

FDI is defined as an investment which aims to acquire a lasting management influence (10 percent or more of voting stock) in an enterprise operating in a foreign economy.⁴ FDI can be decomposed into two types of investments: mergers and acquisitions (M&A) and greenfield investments. The latter type results in the creation of new entities and establishment or building of new offices, buildings, plants or factories a foreign economy. FDI is the sum of equity capital, reinvested earnings and other FDI capital, which includes the borrowing and lending of funds.

Underlying data on FDI were obtained from UNCTAD, the International Trade Centre, the World Bank and the OECD, with UNCTAD as the primary data source. Due to country under coverage, similar to the GEA and C2A databases, the FAOSTAT FDI database likely underestimates actual levels of FDI and inflows to agriculture.

This country under coverage is one key challenge facing the Agriculture FDI database, as is limited access by FAO and other users to the global FDI database compiled by UNCTAD. As a result, the analysis includes only data on FDI flows up to 2011, which show:

- From 1980 to 2011, Foreign Direct Investments (FDI) inflows to agriculture increased from \$300 million to \$1.1 billion, with significant year-to-year volatility, peaking in 2007 at a record-high \$9.2 billion. Total FDI inflows to the economy exhibited similar trends and volatility, rising to \$1.3 trillion in 2011, and peaking at \$2.0 trillion in 2007.
- The agriculture share of total FDI remained below 0.5% throughout the period, while the food, beverages and tobacco (FBT) industry share of global FDI inflows averaged 1.85%.

⁴ International Monetary Fund's Balance of Payments Manual, Fifth Edition, BPM5, IMF 1993 and OECD's Detailed Benchmark Definition of Foreign Direct Investment, Third Edition, BD3, OECD 1996

- Between 2004 and 2011, developing countries accounted for 50% of all FDI inflows to agriculture, with Asia and Latin America as the largest recipients since 1997. In Africa, FDI to agriculture focused on rice, wheat, oilseed and floriculture production. The countries with the highest average inflows to agriculture included Argentina, Brazil, China, Indonesia, Malaysia, Uruguay and Viet Nam. China was both the world's largest recipient of inflows, receiving an average \$1 billion annually, and the world's largest foreign investor in agriculture, spending an average of \$337 million annually.
- Anticipation of and reaction to the Food Price Crisis of 2007 and 2008 saw increased in FDI to agriculture between 2006 and 2011, as more Transnational Corporations (TNCs) and institutional investors sought to acquire land, access to water, and an increasing share of agro-food trade.

e. COUNTRY INVESTMENT (STATISTICS) PROFILES

The intent of a country investment (statistics) profile is to provide a portrait of agricultural financing sources and their trends, particularly in relation to growth in agricultural capital. As ESS develops these profiles, it would benefit from the advice and review of member countries, as well as their commitment to improving the collection and reporting of agricultural investment financing statistics.

3. PROPOSED RECOMMENDATIONS FOR AFCAS MEMBER COUNTRIES

African member countries commit to improving response to the FAO GEA questionnaire, and to collaborating with FAO to improve reporting on FDI and Credit to Agriculture.

Questions, inputs and advice can be e-mailed to Ms. Dubey (Sangita.Dubey@fao.org) or Brian Carisma (Brian.Carisma@fao.org).